

Appln No. 10/040,405
Amdt. Dated October 22, 1004
Reply to Office Action of September 9, 2004

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This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended) An optical fiber terminator package including:
 - a) a semiconductor chip having a top surface and a bottom surface and including at least one first optical device which emits or receives electromagnetic radiation at one or more wavelengths from the top surface;
 - b) a first hollow cap, ~~said cap being a one-piece molded cap comprising having~~ a central portion and a first perimeter wall extending from ~~the a~~ perimeter edge of the central portion with ~~the a~~ free edge of the first perimeter wall bonded to the top surface to provide a first cavity which, in plan view, overlays at least part or all of at least one light emitting device, said central portion including:

at least one region which is at least substantially transparent or translucent to electromagnetic radiation at said one or more wavelengths; and

~~wherein the first cap has been bonded to the semiconductor chip at the wafer stage prior to separation of the wafer into individual packages.~~
2. (Original) The package of claim 1 wherein the cap further includes at least one first attachment means for attaching an electromagnetic radiation transmitting cable or fiber to the cap, whereby at least some electromagnetic radiation transmitted between the at least one first optical device and the cable or fiber passes through said at least one region.
3. (Original) The package of claim 1 wherein the semiconductor chip includes at least one second optical device which emits or receives electromagnetic radiation at one or more wavelengths from the top surface
4. (Currently Amended) The package of claim 4~~2~~ wherein the cap further includes at least one second attachment means for attaching an electromagnetic radiation transmitting cable or fiber to the cap, whereby at least some electromagnetic radiation transmitted between the at least one second optical device and the cable or fiber passes through said at least one region.

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5. (Original) The package of claim 1 further including a second perimeter wall extending from the periphery of the central portion away from the first perimeter wall.
6. (Original) The package of claim 1 further including at least one recess in the central portion.
7. (Original) The package of claim 1 further including a second cap bonded to the bottom surface of the chip.
8. (Original) The package of claim 1 wherein the first optical device is a light emitting device.
9. (Original) The package of claim 1 wherein the first optical device is a photoreceptor.
10. (Original) The package of claim 1 further including a second cap bonded to the bottom surface of the chip, said second cap, in plan view, overlaying at least part or all of at least one first optical device.
11. (Cancelled).
12. (Previously Presented) The package of claim 1 wherein at least one second region refracts said electromagnetic radiation passing therethrough.
13. (Withdrawn) A method of forming an optical fiber terminator package, the method including:
 - a) molding a sheet to form a number of hollow caps, each cap having a central portion and a first perimeter wall extending from a perimeter edge of the central portion, the central portion including at least one region which is at least substantially transparent or translucent to electromagnetic radiation at one or more wavelengths;
 - b) aligning the caps with a wafer, the wafer including a number of semiconductor chips formed therein, each chip having a top surface and a bottom

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surface and including at least one first optical device which emits or receives electromagnetic radiation at the one or more wavelengths from the top surface;

c) bonding the caps to the wafer such that a free edge of the first perimeter wall is bonded to the top surface to provide a first cavity containing at least part or all of at least one light emitting device; and,

d) separating the wafer into individual packages, each package containing a respective chip and associated cap.

14. (Withdrawn) A method according to claim 13, the method including:

e) molding the sheet using first and second mold wafers,

f) removing the first mold wafer; and,

g) aligning the caps with the wafer using the second mold wafer.

15. (Withdrawn) A method according to claim 14, the method further including removing the second wafer mold after bonding the caps to the wafer.

16. (Withdrawn) A method according to claim 14, the mold wafers being formed from silicon.

17. (Withdrawn) A method according to claim 14, the method including removing the mold wafer using a release wafer, the release wafer including a number of pins projecting through the mold wafer to engage the caps.

18. (Withdrawn) A method according to claim 13, the method including:

a. molding the sheet; and,

b. etching the molded sheet to form the number of caps.

19. (Withdrawn) A method according to claim 13, the method including separating the wafer by:

a. applying a number of caps to the bottom surface of the wafer; and,

b. deep etching the bottom surface of the wafer using the caps as a mask to thereby separate the wafer.

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20. (New) The package of claim 1 wherein the at least one region ~~refracts said electromagnetic radiation passing therethrough~~ includes a shaped recess forming a refractive lens for focusing electromagnetic radiation emitted or received by the at least one first optical device.

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